Exploring the Interplay of Variables in Cryptocurrency Investment Behavior: A Gender- Moderated Analysis Using the Theory of Planned Behavior and PLS SEM

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ARTICLE INFO	ABSTRACT
	This research employs gender as a moderating variable to investigate the psychological and social factors that influence bitcoin investing behavior. The research combines the Theory of Planned Behavior (TPB) with PLS-SEM.384 respondents answered Likert-scale questions on feeling overconfident, impulsive, risk-tolerant, subjective norms, perceived behavioral control, copying others, and investing behavior. In order to do this, we use a quantitative approach. A stratified random sample will be used to include both genders in a moderation study. verify the study model and examine the data for errors and correlations, we used AMOS and SPSS. The findings show that perceived behavioral control, subjective norms, and impulsivity, and bitcoin investing behavior are all highly positively correlated. Additionally, these relationships were discovered to be profoundly moderated by gender, indicating profound differences in the way men and women respond to social and psychological factors when making investment choices. The implications are that gender-sensitive approaches must be used when formulating policies, designing bitcoin platforms, and providing financial counseling. With real-world implications for investors who want to encourage good and inclusive investing practice, this study adds depth to our understanding of how demographic and psychological drivers engage to influence investment behavior in the constantly changing digital finance landscape. **Keywords:** Cryptocurrency investment behavior, impulsive attitude, perceived behavioral control, risk tolerance, subjective norms, Theory of Planned Behavior (TPB).

1 INTRODUCTION

Cryptocurrencies, or "cryptocurrencies," are decentralized digital money that operate through a network instead of a central bank or government.

An electronic database that keeps track of each person's money ownership is called a digital ledger, also referred to as a blockchain. Consensus is used to verify currency ownership transfers, control the creation of new currencies, along with safeguard transaction records. The two most common methods for reaching a consensus are the evidence of effort and the proof of stake. Although many of the fungible blockchain tokens that have been created are now referred to by the term "cryptocurrency," they are not considered to be currencies in the familiar sense. In actuality, they have been classified differently by various authorities, including currencies, securities, and commodities. In practice, most people consider cryptocurrencies to be a separate asset class. (Wikipedia, 2025).

More than 16,000 cryptocurrencies have emerged within the financial ecosystem and are traded on online markets as of the end of 2018, after the creation of Bitcoin, the first decentralized cryptocurrency, in 2008. The tremendous volatility of the worldwide cryptocurrency market— which peaked at about three trillion USD in November 2021 and subsequently dropped to roughly one trillion USD by February 2023—has made cryptocurrencies a prominent subject in financial conversations and market activity. By their very nature, cryptocurrencies are worldwide, decentralized, and free from third-party intervention or geographical

limitations. There are many different and complex opinions on cryptocurrencies, ranging from hailed as ground-breaking innovations to doubtful views of them as financial frauds (Wang et al., 2024).

Many people are interested in cryptocurrencies, particularly the younger generation. Many investors in Indonesia are becoming interested in cryptocurrencies. reveal that the growth of cryptocurrency trade in Indonesia in 2023 reached IDR 859.4 trillion, a notable 1,223% rise from IDR 64.9 trillion in 2020. In December 2023, there were 18.51 million registered cryptocurrency investors, a substantial rise from the 11.20 million in December 2021. Also, those in Indonesia who invest in cryptocurrencies are mostly young adults (18–24 years old), followed by those in their twenties and thirties, and finally, those in their forties and fifties. Statistics show that most cryptocurrency investors within Indonesia are members of Generation Y (those born between 1980 and 1995) or Generation Z (those born between 1995 and 2010). Generation Y has endured both positive and negative effects of the technology revolution, including the proliferation of cellphones and Internet use. Then, Generation Z is the most tech- savvy generation and has a strong social media presence. It is anticipated that research conducted in a particular demographic environment would provide more accurate findings. our is one of the contributions our study seeks to make (Aidil Fadli et al., 2024).

Background of the study

For business owners, the absence of enough financial resources was a major problem. Startup entrepreneurs face many challenges when trying to get finance for their companies. These concerns could be alleviated by the participation of unauthorized investors. Informal investors are often referred to as "business angels (BA)" and private investors in a number of economies. Informal investors encourage entrepreneurship and provide first funding for start-ups. The significance of business angels in creating vibrant entrepreneurial ecosystems has been recognized by policymakers in a number of countries. Multiple studies have shown that risk financing for startups mostly comes from venture capital companies, yet these results are not always consistent. According to Hunt and Bygrave, informal investments make up 1.55% of the global GDP, whereas traditional venture capital investments only make up 0.08%. The data emphasizes the importance of private investment. Scientists are keen on finding ways to attract more informal investors in the hopes of stimulating the economy. Finding out why people invest in informal markets could help with this. Defining the connection between aptitude in cognitive and personality components is crucial for understanding how to boost Informal Investment Intention(Singh et al., 2024).

It would seem that bitcoin trading is one of the world's fastest-growing sectors. Monthly, hundreds of thousands of people join exchange platforms, according to polls conducted by major exchanges. Approximately 106 million people throughout the globe are now involved in the buying and selling of cryptocurrency (crypto). Publications made as recently as three months ago provide grossly exaggerated figures due to the rate of increase. The expansion of the bitcoin market has attracted more and more individual investors. Beginning at $550 billion in December 2020 and rising to $275 billion in June 2020, the market capitalization reached $1.75 trillion USD by February 2021. To get this quantity, we multiply the market price by the total number of coins. In February 2021, the value of the most popular cryptocurrency, Bitcoin (BTC), jumped from $9,500 in June 2020 to $58,000. A number of "altcoins" (coins that are not Bitcoin) had meteoric price jumps, including Ethereum (ETH). The rising value of bitcoin, more interest from investors, and increased media attention have all led to heated debates about whether or not the public is well informed about the potential risks associated with this activity. (Delfabbro et al., 2021).

Ever from the beginning of human history, when people began to form social and economic relationships with one another, the idea of investment has been used in a variety of various ways. Investment instruments have been examined over the course of history, including grain and food items, precious metals, stocks, and money. On one hand, investment instruments may be as basic as a food item, and on the other, they might seem as complex as securities. All of these alterations reflect the prevailing zeitgeist. The first three months of this century saw the introduction of a brand-new financial asset to the investing public. Bitcoin is often considered to be the most notable financial asset. While easy to describe, understanding proved to be a more formidable challenge. The matter of whether it is money or not is, in reality, still up for discussion after further research. Someone or several people using the pseudonym Satoshi Nakamoto created Bitcoin in 2008—the first digital currency.

To create Bitcoin, this person or organization would employ Blockchain technology. Although traditional investors were first skeptical of this new money, its popularity has skyrocketed thanks to its relative obscurity. Though it is technically a kind of currency, the fact that it is decentralized and unaffiliated with any one government or bank has helped it stand apart. Reason being, asset in question is not a physical thing. Central banks, particularly in conventional monetary systems, were suspicious of these new currencies because they firmly believed that they controlled the money supply and feared losing control. As a result, the conventional market and its players were the first to test cryptocurrencies. (Erkan et al., 2022).

By 2008, Satatoshi Nakamoto had revealed Bitcoin, the first decentralized digital money. Bitcoin, a decentralized digital currency, allowed users to deposit and receive funds directly over the internet by removing intermediaries like banks. Bitcoin makes money transfers quicker and cheaper than those done via central banks by doing away with the need of commercial middlemen. There will always be a record of all Bitcoin transactions on the blockchain. A blockchain, an open, distributed ledger, may swiftly and

permanently record transactions between two parties. Essentially, recordkeeping and account transactions are handled by the blockchain instead of central banks. Other cryptocurrencies exist in addition to Bitcoin. After Bitcoin was introduced, several cryptocurrency companies appeared with their own currencies. Nearly 1400 cryptocurrencies were available on the market as of January 2018, and the number is continually rising. The idea of cryptocurrency is gaining traction globally, and it is being discussed by both financial institutions and the media. Cryptocurrency is not seen as an alternative transaction mechanism, but rather as an investment possibility known as cryptocurrency trading.(Nagel, 2018).

Cryptocurrency Trading

The trade of cryptocurrencies is known as cryptocurrency trading. Profiting in the short or long term is the aim of cryptocurrency trading. A successful transaction, for instance, would be converting Bitcoins into Ethereum, which gains value over time and yields a profit. However, trading cryptocurrencies carries certain risk because of their volatile nature. Cryptocurrencies have the potential to crash, meaning they will lose value quickly. As the reverse of collapse, cryptocurrencies may also spike, increasing in value quickly. For instance, the price of Ethereum rose 42.000% in 2015, from 95 cents to $400 in only 18 months. Nevertheless, Ethereum crashed and lost 52% of its value during the next four weeks. China said that it will stop all trade by the end of September 2017, which caused the price of Bitcoin to plummet. In only five hours, the price of Bitcoin fell from $3900 to $3400, demonstrating the cryptocurrency's volatility (Nagel, 2018).

2 Literature Review

(Syarkani & Tristanto, 2022) investigated how attitude influences investor choices by mediating the effects of financial knowledge and overconfidence. The study's population consists of individual investors who attend three of Indonesia's best universities. This research employs purposive sampling, a non-probability sampling approached that counts samples based on a variety of criteria. Using Google Forms, the students are given surveys to complete in order to gather data. 297 students completed the questionnaire and submitted it as part of the study's total respondents. Structural Equation Modeling with Partial Least Squaret (SEM- PLS) is what we use to examine the data provided by the respondents. According to the results, there is a positive feedback loop among the following: (1) overconfidence makes people more optimistic; (2) optimism boosts financial literacy; (3) overconfidence makes people more likely to invest; (4) investment decision makes people more financially literate;
(5) investment decision makes people more optimistic; (6) optimism mediates the effect of overconfidence on investment decision; and (7) optimism mediates the effect of overconfidence on donation decision. Academics and bitcoin speculators are also impacted by this study.

(Prasad et al., 2025) looked at how the aspirations of Indian investors to use bitcoins affected Hyderabad Metro. Pricing value, adoption intents, perceived risks, regulatory frameworks, social impact, investment behaviors, effect expectation, and FOMO were among the eight reflective characteristics that were examined using a structured questionnaire. The present research assessed the ways in which perceived risk, the legal environment, social influence, anticipated effort, and pricing value impacted the intentions of Indian investors to embrace cryptocurrencies. The regulatory regime, risk perception, and investing behavior traits all statistically significantly influence Indian investors' adoption intentions with respect to cryptocurrencies.
One beneficial and statistically significant effect of FOMO is to mediate the relationship between investment activity and adoption intention.
When it came to cryptocurrency adoption and investment habits, Fomori was a moderator. A positive slope coefficient between adoption intention along with investing behavior is increased by fear of missing out (FOMO), according to the underlying slope analysis.

(Laryea et al., 2025) examined the likelihood that portfolio values of investors would increase when a clustering method was applied with their behavioral score (Cumulative Prospect Theory, or CPT) in deciding asset allocation.
There are sixty-three unique cryptocurrencies found in the universe, all pulled from Bloomberg from 2020-01-01 through 2022-07-31. The investigation considered two separate and independent time periods: the COVID-19 era and the post-COVID-19 era. Six of the nine portfolios were developed using the CPT, while the other six were developed using the K means Clustering technique. According to the results obtained from optimizing using the copula- based Differential Evolution (DE) algorithm, portfolios with assets having exceptionally high CPT scores were preferred during the post-COVID-19 and full sample periods, with the exception of those that had assets with exceptionally low CPT scores during the COVID-19 period.

2.1 Development of Hypothesis

> **H1: imitating others is positively associated with impulsive attitude of investors.**

(Rajesh, 2025) goal was to looked at how individual investors' decisions are influenced by demographics, behavioral finance concepts, and the significance of ESG variables, with an emphasis on the impact of psychological and herding behavior. The quantitative research approached of this study used simple random sampling to get information from a representative sample of individual investors. Given that many investors are influenced by psychological biases, herd mentality, and market fluctuations, the study may find that

behavioral finance is essential when making investment choices. Particularly, emotions like FOMO and social influence had an impact on novice investors.

(Shekhar & Prasad, 2015) looked at the effects of herd mentality on the financial capital market's stock price volatility on both institutional and retail investors in India. It exposed the fallibilities of the human mind and the application of psychology to the investment blunders made by both inexperienced and seasoned traders. Not only did investor tendencies impact regulatory agencies and market-supporting institutions during the 2008 financial crisis, but so did investor behavior more generally. Using a variety of publicly available data, this study mainly investigated the impact of irrational behavior on both professional and amateur investors.

➢ H2: Overconfidence is positively associated with an impulsive attitude of investors.

(H. Maheshwari and Anup K.Samantaray, et al., 2025) investigated the ways in which global liquidity (FL) influences the investment choices (ID) of individual investors in developing economies. Using a standardized questionnaire, 311 individual Indian investors participated in this research. The sample selection strategies employed in this research included snowball sampling and convenience sampling.

Following partial least square structural equation modeling (PLS-SEM) examination of the study's data, SMART PLS 4.0 was used for further analysis with the purpose of evaluating the hypotheses under investigation. Even though FL probably won't have any direct effect on ID, this research contributes to what is already known about investor behavior by looking at how ATT and OCB mediate the relationship between FL and ID. The data demonstrate that when FL is used with positive ATT, and overconfidence increases an individual investor's competency in making wise judgments.

(Jain et al., 2023) looked into how investors' PTs affected their II, hoping to find out how the two were related. The mediating function of FL and OC between PTs and II requires more study. The research team in this study employed quantitative approaches to survey 327 people who were involved in the Indian stock market. Individual investors' PTs and OC bias were not shown to be statistically related, while there was a strong association between FL and II. Additionally, II is mostly caused by the influential and positive FL and OC bias. Furthermore, the mediation analysis demonstrated that FL has a mediating role in the relationship between PTs and II.

(ul Abdin et al., 2022) found out what causes overconfidence bias, which affects how risk- averse people are and how well their investments do. The three cognitive biases that contribute to overconfidence bias, impact investing performance, and create a nebulous association via risk propensity are also examined in this research. The suggested study paradigm is examined using a mixed-method approach. The findings showed that all cognitive biases affected risk propensity, which in turn affected investing performance. An individual's risk tolerance and financial performance were best predicted by their sense of agency. Furthermore, there is a positive association between investing success and all cognitive biases. Practitioners along with individual investors may benefit from the study's policy implications.

➢ H3: Risk tolerance is positively associated with impulsive attitude of investors

(Hemrajani et al., 2024) The purpose of this study was to examine how two psychological factors influence individual investors' risk-taking behavior and financial risk tolerance. Additionally, the research investigated how FRT mediated the relationship between FRB and psychological factors. To get this information, we used a standardized questionnaire. In all, 303 participants filled out the surveys for the research. In order to assess and validate the research model, structural equation modeling using partial least squares was used. Research uncovered several significant events along the process. Both emotional intelligence and impulsiveness were shown to be strongly correlated with FRB and FRT, respectively. The results provide further evidence that FRT plays a mediating role in the suggested research model. The findings show how crucial psychological variables are in influencing a person's FRT and FRB. FRT's multi-stage process takes into account factors outside of psychology.

(Chhabra & Assistant, 2018) aimed to comprehend how impulsive personality traits influence people's financial risk behavior. It investigated the level of risk that an impulsive investor may take. Every person exhibits some degree of impulsivity, which influences his choices, especially those pertaining to money. Individuals are thought to be sensible. He optimized his wealth by making financial choices after carefully weighing the risk of each potential investment option. However, a number of recent studies had shown that other factors than rationality also influence an individual's financial choices. Numerous additional elements also play a role. These impulsive characteristics have been found in this research, along with an examination of their influence on financial risk behavior. Impulsivity and risk level have been proven to be positively connected. Additionally, there was no statistically significant correlation between these impulsive personality characteristics and risk levels.

(Mukhdoomi & Shah, 2023) purposed of this study was to further the line of investigation into how personality, one such psychological characteristic, affects small investors' risk tolerance without restricting their asset class or grouping them. Small investors in Kashmir employ a quantitative research approach to gauge their risk tolerance and personality factors while making investment selections. To gather information from small investors, the research used a structured questionnaire that was partially adapted from many recognized scales. The findings were obtained via the use of multiple regression and correlations. The study's findings demonstrated that risk tolerance was present among extroverts and open-minded people. On the

other hand, in the region taken into consideration for this research, risk-averse people were conscientious, neurotic, and pleasant. The findings suggested that when advising small investors on investments, financial advisers should take their personality into account.

> ➤ **H4: Impulsive attitude is positively associated with cryptocurrency investment behaviour.**

(Ryu, 2024) By tracing the causes and effects of problematic BI behavior and determining which factors contributed most to it, this research hopes to get a better understanding of the phenomenon. received survey responses from 413 individuals who have spent money on Bitcoin in the past, all throughout the 2018 crash. The proposed study model was evaluated with the use of a partial least squares analysis. Relationships were shown to be beneficial for caution, negative urgency, over-anticipation, sensation seeking, and problematic BI conduct, but unfavorable for restraint. A lack of appropriate business intelligence procedures has a detrimental effect on investor satisfaction. Further, we found that both subjective and objective financial literacy may mitigate the association between the antecedents and problematic BI behavior. Investors in four different categories, each with its own unique subjective and objective knowledge of Bitcoin, show different relationships among the antecedents and problematic BI behavior.

(Kumar Sharma et al., 2024) researched was the first attempt to investigated how factors including self-control, impulsive investing inclinations, domain expertise, and subjective norms affect judgments about speculative investments. The study was the very first of its kind to employed structural equation modeling based on a sample of 367 responses in India. The research demonstrated that self-control and impulsive investing are considerably affected by subjective standards and domain knowledge. In addition, there are significant correlations between speculative investment decisions and impulsive investing. This understanding highlighted how difficult it was for individuals to control themselves and yet make speculative assumptions with undesirable consequences. The findings yielded valuable insights into investing behaviors in the crypto arena, with real-world applications for regulators and investors.

2.2 Research Gap

Investor behavior has been extensively researched, but there are still several key gaps. Most existing studies address isolated psychological traits such as herd mentality or overconfidence, but few empirical studies examine how these factors interact with one another to influence impulsive attitudes and how they in turn directly influence bitcoin investing behavior. The manner in which attributes such as emotional biases, risk tolerance, and imitation interact under one framework to shape impulsive investing decisions has also been poorly addressed. While a number of studies highlight the significance of subjective standards and financial literacy, they are mostly considered separately and not as part of a dynamic model. Most research is also context-bound, lacking broader demographic or cross-cultural perspectives that might be richer in understanding investor psychology. There are few studies involving longitudinal or experimental designs to show causation, with most relying upon self-reported data and cross-sectional studies. These limitations call attention to the need for more in-depth and combined studies incorporating behavioral, psychological, and environmental factors to better understand the processes that underlie impulsive investing behavior, particularly within the rapidly evolving area of cryptocurrencies.

3 METHODOLOGY

3.1 Research design

Employing gender-moderated analysis through the use of PLS SEM and the Theory of Planned Behavior, the study employed a quantitative approach to explore the relationship between components in bitcoin investment behavior. For the purpose of statistical analysis, data were collected from 384 participants chosen at random and evaluated using a predetermined format. A standardized survey was used to collect data. The survey comprised Likert-scale questions that measured many traits, such as compliance to others, conduct when investing in bitcoin, subjective norms, risk tolerance, and perceived behavioral control. For this study, the researchers used SPSS, which stands for "social science statistical software," to analyze this data. To verify the assumptions and examine the interplay of the main components, structural equation modeling (SEM) made use of Analysis of Moment Structures, as well as AMOS.

3.2 Conceptual Framework
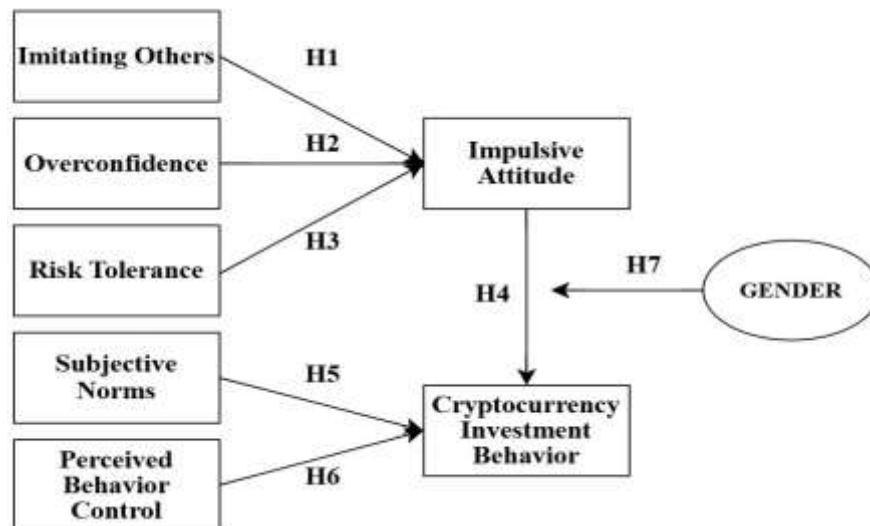
Figure 1 Conceptual frame work

The theoretical framework depicted in the figure investigates the psychological and behavioral determinants that influence the investing behavior of bitcoin investors. According to this theory, an individual's impulsive behavior is a mediator of his or her psychological characteristics and investment decision-making. Specifically, impulsive attitudes are argued to be influenced by imitating others (H1), overconfidence (H2), and risk tolerance (H3), with this subsequently affecting investing behavior (H4). In addition, subjective norms (H5) and perceived behavior control (H6) also affect the behavior of bitcoin investors. Ability confidence and peer influence are both part of this decision-making. Curiously, gender is also taken into account as a moderating component in the model (H7). Investing habit and impulsive attitude may vary across genders, according to this. Using this combined paradigm that includes the theory of planned behavior and behavioral finance, it could potentially inform us more about the psychological determinants of bitcoin investments.

3.3 Hypothesis
H1: imitating others is positively associated with impulsive attitude of investors.
H2: overconfidence is positively associated with impulsive attitude of investors.
H3: Risk tolerance is positively associated with impulsive attitude of investors.
H4: Impulsive attitude is positively associated with cryptocurrency investment behaviour.
H5: Subjective norms is positively associated with cryptocurrency investment behaviour.
H6: Perceived behaviour control is positively associated with cryptocurrency investment behaviour.
H7(a): Gender moderates the relationship between impulsive attitude and cryptocurrency investment behaviour.
H7(b): Gender moderates the relationship between subjective norms and cryptocurrency investment behaviour.
H7(c): Gender moderates the relationship between perceived behaviour control and cryptocurrency investment behaviour .

3.4 Sample selection
The study's dataset was statistically representative of the community as 384 people participated in the survey. To allow for gender-based moderation analysis, the sample contained both male and female respondents. Stratified random sampling should be used. examined the interplay between several factors and their impact on bitcoin investing behavior using PLS SEM using the Theory of Planned Behavior in a study that was mediated by gender.

3.5 Data collection
This research used a quantitative approach, including methodical data collection strategies to ensure accuracy and reliability. A structured questionnaire designed to evaluate the Exploring the Interplay of Variables in Cryptocurrency Investment Behavior: A Study Associated with Gender Utilizing PLS SEM and the Theory of Planned Behavior was a component of the main data collection strategy. Using many Likert-scale comments to assess respondents' credit approval experiences is a crucial part of the survey that guarantees it captures respondents' opinions. The criteria that participants were asked to assess included data mimicking others, impulsive attitude, overconfidence, risk tolerance, subjective norms, perceived behavior control, and bitcoin investing behavior. Email, Google Forms, and fintech lending platforms were used to disseminate the survey online in order to guarantee broad participation and accessibility. The

primary data will be supplemented with secondary data from government publications, published research, and institutional records.

3.6 Measures

The information has been collected by means of a predetermined survey. The questionnaire will inquire about respondents' thoughts on several research subjects using a 5-point Likert scale, ranging from very disagree to very agree. You may choose between open-ended and closed-ended items on the survey. In order to get relevant information on the chosen research variables, the questions have been carefully crafted. A distinct questionnaire has been developed for each of the five types of respondents who will be included in the survey. The bellow mention table show variables and no. items considered for the study.

S. No	Variable Name	No. Items	Source
1	Risk tolerance	5	Yang et al. (2021)
2	Overconfidence	3	Parmitasari et al. (2021)
3	Imitating others	3	Sajeev et al. (2021)
4	Impulsive attitude	3	Eysenck and Eysenck (1978) and Harden and Tucker-Drob (2011)
5	Subjective norms	4	Taylor and Todd (1995)
6	Perceived behaviour control	3	Walton et al. (2018)

4   Results

4.1 Demographic variables

Table 1 Demographic variables

Demographic variables		Frequency	Percentage
Gender	Male	207	53.9
	Female	177	46.1
	Total	384	100.0
Age	18-24 years	121	31.5
	25-34 years	130	33.9
	35-44 years	68	17.7
	45-54 years	58	15.1
	55 and above	7	1.8
	Total	384	100.0
	High School	80	20.8
	Undergraduate Degree	112	29.2
	Postgraduate Degree	116	30.2
	Professional	76	19.8
	Total	384	100.0

The 384 respondents are broken down by age, gender, and education level in the table. It was found that 207 (53.9%) men and 177 (46.1%) females participated in the survey. On the basis of age, the largest proportion were in the 25–34 years bracket (33.9%), followed by 18–24 years (31.5%), 35–44 years (17.7%), 45–54 years (15.1%), and a mere 1.8% were 55 years and above. With regard to educational background, the largest number of respondents had a postgraduate degree (30.2%), followed by undergraduate degrees (29.2%), high school education (20.8%), and professional qualifications (19.8%). The demographic profile in this way presents a complete picture of the study participants.

4.2 Factor analysis

Table 2 Internal Consistency and Convergent Validity

Constructs	Cronbach's Alpha	AVE	Composite Reliability
Risk tolerance	0.879	0.733462236	0.849136842
Overconfidence	0.849	0.726856755	0.728038352
Imitating others	0.750	0.762121346	0.746389018
Impulsive attitude	0.836	0.758025957	0.74434373
Subjective norms	0.813	0.750724365	0.818858982
Perceived behaviour control	0.658	0.812558369	0.769875674
Cryptocurrency Investment Behaviour	0.914	0.755853701	0.856680744

The research's constructs were evaluated for validity and reliability, and the table presents the findings. Cronbach's Alpha ratings for each construct range from 0.658 to 0.914, indicating excellent to very strong internal consistency. Strong convergent validity is shown by all concepts having an AVE value higher than 0.5. Furthermore, with Composite Dependability (CR) ratings above the required 0.7 threshold, most of the constructions demonstrate strong dependability. All things considered, these figures prove that the measurement approach is useful for determining what variables affect people's decisions to invest in bitcoin.

Hypothesis development Table 3 Hypothesis outcome

Hypothesis	Relationship			Estimate	Sig. P-Value	Results
H1	Imitating others	---->	Impulsive attitude	0.654	***	Accepted
H2	Overconfidence	---->	Impulsive attitude	0.670	***	Accepted
			Impulsive attitude			
H3	Risk tolerance	---->		0.814	***	Accepted
H4	Impulsive attitude	---->	Cryptocurrency Investment Behavior	0.660	***	Accepted
H5	Subjective norms	---->	Cryptocurrency Investment Behavior	0.675	***	Accepted
H6	Perceived behavior control	---->	Cryptocurrency Investment Behavior	0.613	***	Accepted
	ZCryptocurrency_Investment_Behaviour	---->	ZImpulsive_Attitude	0.193	***	
H7a	ZCryptocurrency_Investment_Behaviour	---->	ZGENDER	0.835	***	Accepted
	ZCryptocurrency_Investment_Behaviour	---->	Interaction	0.102	***	
	ZCryptocurrency_Investment_Behaviour	---->	ZSubjective_Norms	0.188	***	
H7b	ZCryptocurrency_Investment_B ehaviour	---->	ZGENDER	0.834	***	Accepted
	ZCryptocurrency_Investment_Behaviour	---->	Interaction	0.105	***	
	ZCryptocurrency_Investment_Behaviour	---->	ZPerceived_Behaviour_Control	0.201	***	
H7c	ZCryptocurrency_Investment_Behaviour	---->	ZGENDER	0.829	***	Accepted
	ZCryptocurrency_Investment_B ehaviour	---->	Interaction3	0.110	***	

H1: Imitating others is positively associated with impulsive attitude of investors.
The relationship between imitating others and impulsive attitude is significant, with an estimate of 0.654 and a p-value indicated by *** ($p < 0.001$), leading to the acceptance of the hypothesis. This suggests that individuals who tend to imitate others are more likely to exhibit impulsive attitudes.

➢ **H2: Overconfidence is positively associated with impulsive attitude of investors.**
The hypothesis is supported by the extremely significant p-value (***) and the estimate of 0.670, which indicate that overconfidence has a considerable positive impact on impulsive attitude. People who are overconfident tend to act impulsively, according to this.

➢ **H3: Risk tolerance is positively associated with impulsive attitude of investors.**
Risk tolerance is significantly related to impulsive attitude, with a strong estimate of 0.814 and a p-value of ***, resulting in the hypothesis being accepted. This implies that individuals with a high tolerance for risk are more likely to act impulsively.

➢ **H4: Impulsive attitude is positively associated with cryptocurrency investment behavior.**
Impulsive attitude significantly affects cryptocurrency investment behavior, with an estimate of 0.660 and a p-value of ***, confirming the hypothesis. This means that impulsive individuals are more inclined to invest in cryptocurrency.

➢ **H5: Subjective norms are positively associated with cryptocurrency investment behavior.**
Subjective norms are positively and significantly associated with cryptocurrency investment behavior (estimate = 0.675, $p < 0.001$), supporting the hypothesis. This indicates that social influences play a key role in driving investment decisions in cryptocurrency.

➢ **H6: Perceived behavior control is positively associated with cryptocurrency investment behavior.**
Perceived behavioral control also has a significant impact on cryptocurrency investment behavior, with an estimate of 0.613 and a highly significant p-value (***), leading to the acceptance of the hypothesis. This suggests that individuals' confidence in their ability to control investment outcomes influences their participation in cryptocurrency investment.

➢ **H7(a): Gender moderates the relationship between impulsive attitude and cryptocurrency investment behavior.**
The findings indicate that impulsive attitude has a strong impact on cryptocurrency investment behavior (β =

0.193, p < 0.001). Gender also significantly affects it (β = 0.835, p < 0.001), and the interaction effect is significant (β = 0.102, p < 0.001). It indicates that impulsive attitudes influence cryptocurrency investments differently among men and women.

➢ **H7(b): Gender moderates the relationship between subjective norms and cryptocurrency investment behavior.**

The results show subjective norms have a strong impact on cryptocurrency investment behavior (β = 0.188, p < 0.001). Gender is also an important influence (β = 0.834, p < 0.001), and the effect of interaction is significant (β = 0.105, p < 0.001). This means the impact of social expectations on cryptocurrency investment depends on gender.

➢ **H7(c): Gender moderates the relationship between perceived behavior control and cryptocurrency investment behavior.**

The results show that bitcoin investing behavior is positively impacted by perceived behavioral control (β = 0.201, p < 0.001). Both the interaction effect (β = 0.110, p < 0.001) and gender have a substantial impact on it (β = 0.829, p < 0.001). This indicates that when choosing to invest in cryptocurrencies, men and women see control over assets differently.

Discussion:

The study's findings show significant correlations between a number of social and psychological factors and bitcoin investing behavior. Investing in cryptocurrencies has been shown to benefit from impulsive temperament, subjective norms, and perceived behavior control. These characteristics increase the likelihood that investors will engage in cryptocurrency markets. Interestingly, gender is also shown to be a substantial moderating element in these types of associations. The moderation research reveals that the influence of impulsive attitude on bitcoin investment is more pronounced among certain gender groups, indicating that men and women have distinct impulsive investing tendencies. Similarly, gender affects how subjective norms and perceived behavioral control affect investment decisions, highlighting the finding that gender has distinct perspectives on social influence and perceived control over investments. The importance of considering demographic factors while studying investing behavior is established by this disparity. The reliability and validity test further confirms the soundness of the idea, since high Cronbach's Alpha values indicate strong internal consistency and excellent convergent validity is established by high AVE and composite reliability values. Contributing to the existing research, the results show that gender is a defining role in the social and psychological drivers of bitcoin investing. Consequently, it follows that bitcoin marketing and investing tactics would benefit from taking gender into consideration. Further, the study uncovers the prospects of personalized financial education programs in combating impulsive decision-making and perceptions of control, especially for different gender segments to promote prudent investment behavior. Overall, the study sheds light on how psychological factors interlink with gender and investment behavior in the fast- changing cryptocurrency market.

Conclusion:

The findings of the research reveal that several social and psychological aspects and bitcoin investment behavior are strongly correlated. Cryptocurrency investment was significantly positively correlated with perceived control, subjective norms, and impulsive attitude. This indicates that individual traits, perceived control, and social influence all significantly influence investing decisions. Moreover, gender had a key mediating role in the relationship between these characteristics and investment decisions. Gender has a role in decision-making, because men and women responded differently to the effects of spontaneous attitude, subjective norms, and perceived behavioral control on bitcoin investment. Men and women respond differently to social and psychological signals while investing in cryptocurrencies, according to the interaction effects that were discovered. Consequently, gender-neutral methodologies should be used when studying investing intentions and actions. These findings might be helpful for lawmakers, cryptocurrency exchanges, financial advisers, and anybody else in the industry who wants a better grasp of investor behavior and methods that take gender variations in investing into account. The research emphasizes the need of comprehending the many psychological and demographic aspects that impact bitcoin investing patterns in a constantly shifting financial landscape.

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